

NOTES ON AUSTRALIAN VERRUCARIACEAE (LICHENES): 1

by

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ABSTRACT

McCarthy, P. M. Notes on Australian Verrucariaceae (Lichenes): 1. *Muelleria* 7(2): 189–192 (1990).—*Verrucaria howensis* McCarthy, from Lord Howe Island, is described as new. Four other taxa are reported from Australia for the first time.

INTRODUCTION

The ill-considered description of numerous taxa, a consequent grossly-inflated synonymy and uncertainty over generic delimitation and relationships have inhibited the achievement of a comprehensive overview of the lichen family Verrucariaceae. A recent attempt to rationalise the situation in western Europe recognised 326 species of which 161 were attributable to the type genus (Clauzade & Roux 1985).

In contrast, the Australian experience has been one of almost total neglect. A number of the 16 taxa listed by Filson (1988) are doubtful, while four of the eight *Verrucariae* are marine species, the latter very much a peripheral group within the genus. Moreover, the number of specimens collected in Australia and confirmed as belonging to the family scarcely exceeds 200.

The present contribution derives from the examination of specimens in the National Herbarium of Victoria (MEL), most of which occurred fortuitously on rock fragments dominated by and filed under other lichen species.

TAXONOMY

1. *Verrucaria baldensis* Massal., Ric. Lich. Crost. 173 (1852).

Verrucaria baldensis is a cosmopolitan lichen formerly known as *V. sphinctrina* Ach., the latter name being applicable only to a foliicolous taxon. An obligately calcicolous species, *V. baldensis* has an endolithic thallus, immersed 0.2–0.3 mm perithecia and a lid-like and radically-fissured involucrellum. Already known from Western Australia and Victoria, the first records for South Australia and New South Wales are reported here.

SPECIMENS EXAMINED:

South Australia—Approximately 7 km E of Morgan, on Renmark Rd, 26.vii.1979, *J. H. Willis* (MEL 1045500).

New South Wales—48 km S of Braidwood, along Reedy Creek, Marble Arch, alt. 620 m, 2.iii.1978, *J. A. Elix* 4433 (MEL 1024404; filed as *Petractis clausa*).

2. *Verrucaria hochstetteri* Fr., Lich. Eur. 435 (1831).

Previously unknown in Australia, *V. hochstetteri* is almost invariably endolithic in limestone. The simple immersed perithecia measure 0.3–0.8 mm and the ellipsoid ascospores 20–48 × 12–25 μm . This lichen is common in most of Europe; it has also been reported from North Africa and New Caledonia.

SPECIMENS EXAMINED:

South Australia—Near Fowler's Bay, Colona Homestead, ?.vii.1947, *J. H. Willis* (MEL 8741; filed with *Lecanora sphaerospora*).

Victoria—15 km E of Geelong, Point Wilson, ?.iii.1980, *A. Geddes* (MEL 1029160; filed with *Dermatocarpon compactum*).

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3. *Verrucaria howensis* McCarthy, sp. nov.

Thallus crustaceus, epilithicus, moderate expansus, continuus vel areolatus, obscure cinereo-viridis vel olivaceus, 0.04–0.08 mm crassus, sine prothallo distinguibili. *Areolae* regulares, angulares, laeves, planae aut raro leviter convexae, 0.1–0.2 (–0.25) mm latae. *Algae* virides, cellulis globosis, (5–)6–10 μ m diametro. *Ascomata* perithecioidea, semiimmersa vel fere superficialia, moderate numerosa, solitaria, prope basim thallo tecto. *Involucrellum* carbonaceum, nitidum, (0.1–)0.14(–0.2) mm diametro, 20–40 μ m crassum, expansum, dimidiatum vel usque ad basim excipuli descendens. *Ostiolum* inconspicuum aut leviter depressum. *Centrum* globosum, (0.08–)0.1(–0.13) mm diametro. *Excipulum* fuscoatrum, 10–15 μ m crassum, cellulis 6–8 \times 2–4 μ m. *Periphyses* 20–25 \times 1.5 μ m. *Paraphyses* desunt. *Asci* bitunicati, clavati, 8-spori, 17–25 \times 9–13 μ m. *Sporae* simplices, incolorate, ellipsoideae, (5.9–)7.3(–9.4) \times (3.2–)4.1(–5.0) μ m, contentis hyalinis vel subtiliter granulosis.

HOLOTYPE: New South Wales, Lord Howe Island, on calcareous tuff, ?x.1965, R. F. Steel 51 (MEL 10235).

Thallus crustose, epilithic, moderately wide-spreading, continuous to rimose or areolate, dull grey-green to olive-green, 0.04–0.08 mm thick, without a visible prothallus. *Areolae* regular, angular, smooth, plane or, rarely, somewhat convex, 0.1–0.2(–0.25) mm wide. *Algae* green, globose, (5–)6–10 μ m diam. *Ascomata* perithecioid, compound, semi-immersed to almost superficial, moderately numerous, solitary, often covered by a thalline collar towards the base. *Involucrellum* carbonaceus, glossy, 0.1–0.14(–0.2) mm diam., 20–40 μ m thick, dimidiate or extending to excipulum-base level. *Ostiole* inconspicuous or slightly depressed. *Centrum* globose, (0.08–)0.1(–0.12) mm diam. *Excipulum* brown-black, 10–15 μ m thick; cells 6–8 \times 2–4 μ m. *Periphyses* 20–25 \times 1.5 μ m. *Paraphyses* absent. *Asci* bitunicate, clavate, 8-spored, 17–25 \times 9–13 μ m. *Ascospores* simple, colourless, ellipsoid, (5.9–)7.3(–9.4) \times (3.2–)4.1(–5.0) μ m; contents clear to finely granulose. (Fig. 1)

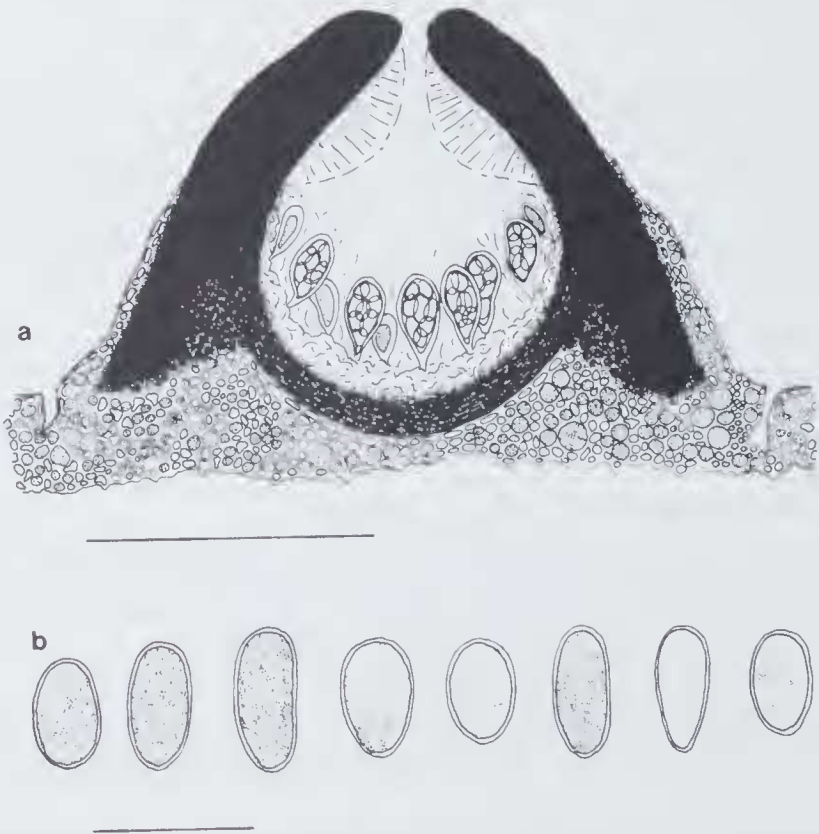


Fig. 1. *Verrucaria howensis*. a—vertical section of ascoma, scale 0.1 mm. b—ascospore, scale 10 μ m.

DISCUSSION:

In spite of the lack of precise information concerning the habitat of *V. howensis*, its association with *Physcia* sp. and *Lepraria aff. incana* suggests at least moderate shading in a non-marine and non-aquatic environment.

Minute-spored terrestrial *Verrucariae* represent a compact and comparatively manageable cluster of species. Most of the 13 saxicolous taxa described have localised known distributions ranging from northern Canada and Greenland, through western, central and northern Europe to the far-eastern USSR (McCarthy 1988a, b). The geographical disjunction introduced by *V. howensis* is, however, accompanied by a range of fundamental vegetative and ascomatal differences. While the strongest resemblance is to *V. bulgarica* Szat., the latter exhibits a medium to dark brown thallus, larger areolae, a non-spreading 20 μm thick involucrellum, a generally paler excipulum and larger ascospores in asci measuring 25–35 \times 14–18 μm .

4. *Verrucaria macrostoma f. furfuracea* B. de Lesd., Rev. Bryol. et Lichénol. 18: 71 (1949).

One of the few *Verrucariae* to produce clearly-defined asexual propagules, *V. macrostoma f. furfuracea* displays a thick pale brown to olive-green areolate to sub-squamulose thallus. Minute isidia develop along the margins of areolae and often erupt to form sorediate patches. Newly recorded from Australia, this lichen is also known from Great Britain and from central and southern Europe.

SPECIMEN EXAMINED:

Victoria—15 km E of Geelong, Point Wilson, ?iii.1980, A. Geddes (MEL 1029160; filed with *Dermatocarpon compactum*).

5. *Verrucaria nigrescens* Pers., Ulsteri's Annln Bot. 14: 36 (1795).

Predominantly a limestone-inhabiting species, *Verrucaria nigrescens* may also be found on shale, slate, calcareous sandstone and, more rarely, on hard siliceous rocks. The thallus is dark green to almost black, areolate, with the thallus and/or individual areolae edged by black prothalline hyphae. The 0.2–0.4 mm diam. semi-immersed perithecia have a thick, deeply-penetrating involucrellum and a brown-black excipulum. Most ascospores lie within the range 20–30 \times 10–14 μm . It is a cosmopolitan species in Europe and is also known from northern Africa and North America.

SPECIMEN EXAMINED:

Victoria—Winslow, on limestone, 12.xi.1987, W. H. Ewers 1665 (MEL 1051984).

6. *Thelidium papulare* (Fr.) Arnold, Flora 68: 147 (1885). *Verrucaria papularis* Fr., Lichenogr. Europ. Reform. 434 (1831).

Thelidium is a poorly circumscribed genus. Traditionally characterised within the *Verrucariaceae* by its transversely-septate ascospores, this criterion loses definition as the genus appears to overlap both with *Verrucaria* and *Polyblastia*. Although represented in the floras of New Zealand and Antarctica, this is the first occasion on which *Thelidium* has been reported from Australia.

Thelidium papulare is a reasonably unambiguous entity. The thallus ranges from endolithic to subepilithic and the semi-immersed to almost superficial perithecia have a 0.4–0.7 mm diam. involucrellum and 3(–4)-septate ascospores of 30–50(–60) \times 14–22 μm .

SPECIMEN EXAMINED:

New South Wales—48 km S of Braidwood, along Reedy Creek, Marble Arch, alt. 620 m, on limestone, 2.iii.1978, J. A. Elix 4433 (MEL 1024404; filed as *Petractis clausa*).

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